

Description

The present invention relates to safety devices for workers working in high and dangerous places, for example on metal towers, pylons, etc.

The invention relates to devices which are mobile along a safety line and which comprise a body provided with a channel for guiding the safety line, said body comprising a brake connected by a strap to a belt carried by a worker working in a dangerous place, such that if said worker falls, the brake immobilises the device on the safety line.

Such devices have the drawback of being free-moving on the safety line when they are not acted upon, so that they are not very practical.

One of the objects of the present invention is to produce a device which may be easily immobilised at any point on the safety line.

The device according to the invention is of the type comprising a body having a channel intended to be passed through by a safety line, said body comprising means for opening the channel for its positioning on the safety line and having a clevis located in a plane diametric to the channel and opening therein, a brake formed by a bell crank lever being articulated between the wings of said clevis and of which one arm is provided with notches to cooperate with the safety line, whilst the other arm is terminated by a ring intended to be connected by a strap to a belt worn by the user, resilient means tending to separate the arm provided with notches from the channel, and is characterised in that the wings of the clevis each comprise



a slot extending in the direction of the channel, a pin being guided in said slots and supporting a toothed wheel in a wedged manner, means being provided, on the one hand, for pushing the toothed wheel so that it bears against the safety line by braking the pin thereof and, on the other hand, for releasing said toothed wheel.

According to a particular feature, the toothed wheel is acted upon by a spring so as to be held against the safety line.

Finally, according to a constructive feature, the pin of the toothed wheel is extended on one side of the clevis by a stud and a lever acted upon by a spring is tiltably mounted on the pivot pin of the brake, so as to bear against the stud, a lug being provided to hold the lever separate from the stud.

The invention will now be described in more detail with reference to a particular embodiment given solely by way of example and shown in the accompanying drawings, in which:

Figure 1 is a perspective view of the safety device according to the invention.

Figure 2 is a partial sectional elevation.

Figure 3 is an elevation of the device of the preceding figures.

Figure 4 is a plan view.

Figure 5 is an elevation of a detail, and

Figure 6 is a sectional view of the detail of Figure 5.

5 The device shown in the figures comprises a body 1 formed from two parts 2 and 3 articulated on a pin 4, the part 2 being extended by a tab 5 perforated by a hole 9 which is penetrated by a screw 10 having a knurled head 6. The part 2 also comprises a ring 11 intended to receive the
10 bolt 12 of a lock 13 provided on the part 3. The bolt is pushed by a spring 14 into its activated position and a stud 15 is provided, guided in a slot 16, to control the movement of the bolt 12 to one side.

15 The part 3 comprises a tab 7 which is perforated by a hole in which a nut 8 is riveted.

The two parts 2 and 3 may also be separated by pivoting on the pin 4 to allow the passage of a safety line 18. When
20 the two parts are assembled by the lock 13 and the screw 10 they form a channel 20 to allow the guiding of the device along the safety line 18.

The part 3 comprises two wings 22 and 23 connected by
25 rivets 24, 25 and 26 in order to form a clevis 21 supporting a pin 28 on which a brake 29 is articulated.

The brake 29 consists of a bell crank lever of which one arm 34 is terminated by notches 30 intended to cooperate
30 with the safety line 18, whilst the other arm 35 is provided with a ring 31 intended to be connected by a strap to a belt of the worker.

A spring 33 is wound on the pin 28 and of which one of the ends abuts against the rivet 24 whilst the other end bears against the brake 29.

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The spring 33 is under tension, such that it tends to tilt the brake in the direction of the arrow f, so that the arm 34 bears against the rivet 24, the notches 30 being thus separated from the line 18. The spring 33 is weak, however,
 10 so that weak traction applied to the ring 31 in the direction of the arrow g actuates the brake into its activated position.

The wings 22 and 23 of the clevis 21 comprise slots 37 in
 15 which is guided a pin 38 integral with a toothed wheel 39 having a central slot 40, the pin 38 on the side of the wing 22 being extended by a stud 41.

A spring 42 is wound on the rivet 25 and of which one arm
 20 bears against the rivet 26 whilst the other arm is terminated by a loop 44 bearing against the slot 40 in order to tend to push the toothed wheel towards the channel 20.

25 The pin 28 is provided with an extension 28a on the side of the external face of the wing 22, a lever 49 being articulated with a certain freedom of movement on this extension, said lever being acted upon by a spring 48 wound on said extension with one arm abutting against the body
 30 and one arm abutting against the lever. The spring has a tendency to apply the free end of the lever onto the stud

41 and a lug 50 is provided allowing the lever 49 to be held separate from the stud 41.

The operation of the device is as follows:

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The device is mounted on a safety line, 18 fixed at one end, for example, to the top of scaffolding, the line passing through the channel 20. One of the ends of a strap is fixed to the ring 31 and the other end thereof is fixed
10 to a belt worn by the worker working on the scaffolding. When the lever 49 cooperates with the lug 50, the device is able to slide freely on the line 18 since, by the action of the spring 33, the arm 34 is separated from the line and abuts against the rivet 24, whilst the toothed wheel 39
15 cooperates with the line 18, pushed by the spring 42, but the force thereof is insufficient to ensure any immobilisation.

If the worker falls, traction is exerted on the ring 31 in
20 the direction of the arrow g and the lever tilts about the pin 28 such that the line is trapped between the notches 30 and the base of the channel 20.

If the worker wishes to wedge the device at a specific
25 point on the safety line 18, the worker releases the lever 49 from the lug 50 and the lever therefore bears against the stud 41 and opposes the rotation thereof such that the toothed wheel 39 which is applied against the line 18 is immobilised.

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Naturally, the invention is not limited to the embodiment which has just been disclosed and shown. Various changes in

the details thereof may be made thereto without departing from the scope of the invention.

Claims

1. Safety device of the type comprising a body (1) having a channel (20) intended to be passed through by a safety
5 line, said body comprising means (4, 5, 8, 13) for opening the channel (20) for its positioning on the safety line (18) and having a clevis (21) located in a plane diametric to the channel (20) and opening therein, a brake (29) formed by a bell crank lever being articulated between the
10 wings (22, 23) of said clevis (21) and of which one arm (34) is provided with notches (30) to cooperate with the safety line (18), whilst the other arm is terminated by a ring (31) intended to be connected by a strap to a belt worn by the user, resilient means (33) tending to separate
15 the arm provided with notches (30) from the channel, characterised in that the wings of the clevis (21) each comprise a slot (37) extending in the direction of the channel (20), a pin (38) being guided in said slots and supporting a toothed wheel (39) in a wedged manner, means
20 being provided, on the one hand, for pushing the toothed wheel (39) so that it bears against the safety line (18) braking the pin (38) thereof and, on the other hand, for releasing said toothed wheel (39).
- 25 2. Safety device according to Claim 1, characterised in that the toothed wheel (39) is acted upon by a spring (42) so as to be held against the safety line (18).
3. Safety device according to Claim 1, characterised in
30 that the pin of the toothed wheel (39) is extended on one side of the clevis (31) by a stud (41) and a lever (49) acted upon by a spring (48) is tiltably mounted on the

pivot pin of the brake (29), so as to bear against the stud (41), a lug (50) being provided to hold the lever separate from the stud (41).

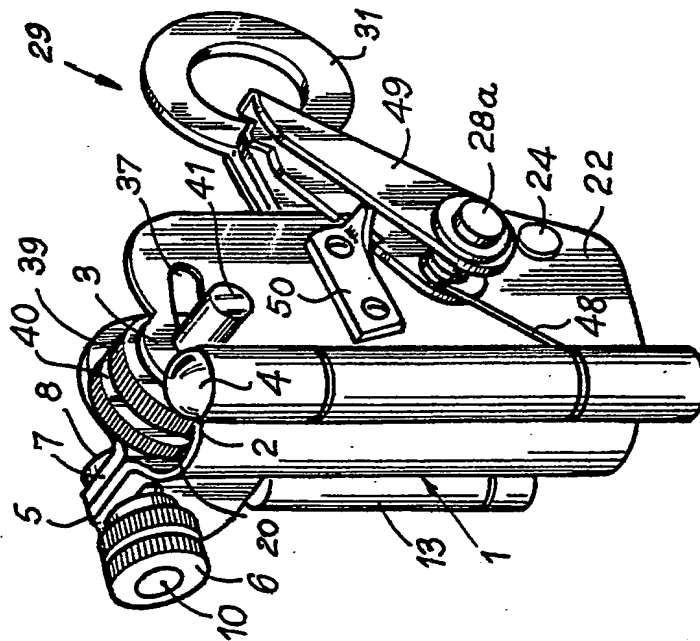


FIG. 1

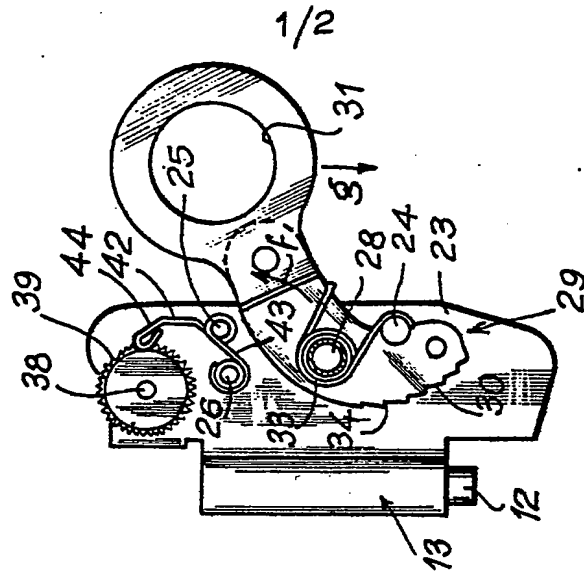
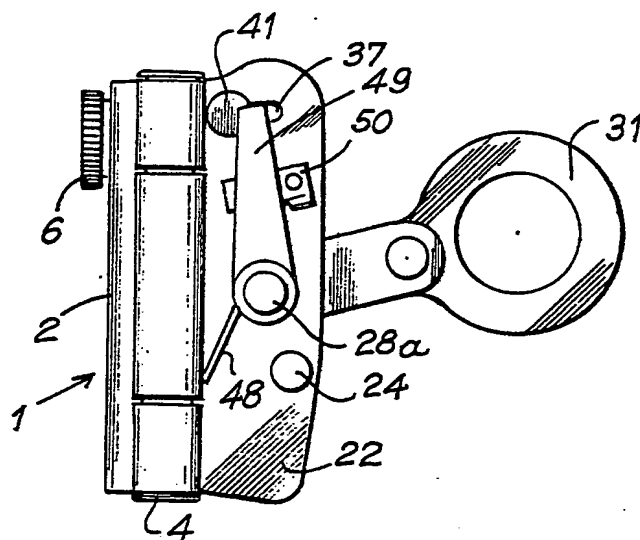
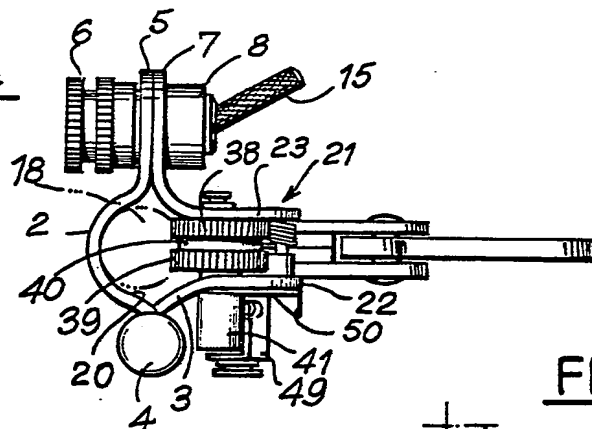
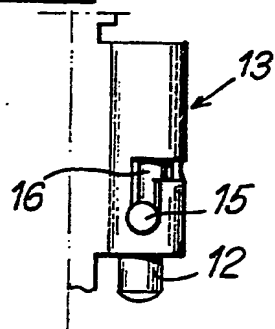


FIG. 2

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FIG.3FIG.4FIG.5FIG.6